GENERAL INDEX

A

Absence of seed dormancy in a white mutant strain of *Helianthus annuus* L., 252

Abstracts of papers presented at the meetings sponsored jointly by the American Society of Plant Physiologists and the physiological section of the Botanical Society of America held at Indiana University, Bloomington, August 24–28, 1958. i–li.

Acer pensylvanicum, water content of stems, 173

Acetate-1-C^{14}, effects of IAA on utilization by pea stem slices, 93

Acid metabolism in green plants, 226

Action spectrum for photosynthetic phosphorylation by spinach chloroplasts, 72

Action spectrum of phototropic tip-curvature of Avena, 360

Agaricus campestris, substrates for the polyphenol oxidase from, 255

AHRENS, JOHN F. See ZUCKER, MILTON, 246

Alcohol production in apple skin, photocontrol of, 409

Aldehyde production in apple skin, photocontrol of, 409

Algae, green, effects of light intensity on growth rates of, 109

Algal growth in crossed gradients of light intensity and temperature, 249

Alkaloids, production, translocation and accumulation in tobacco scions grafted to tomato rootstocks, 375

Allium cepa, carbohydrate content of root tip cells, 64

Allium cepa, MCPA adsorption by, 431

*allo*Gibberic acid, identity with gibberellin B, 329

American Society of Plant Physiologists, annual business meeting, report of, 77

American Society of Plant Physiologists, appointments, 77

American Society of Plant Physiologists, executive committee meeting, report of, 74

American Society of Plant Physiologists, northeastern section, 1st annual meeting, 382

American Society of Plant Physiologists, midwestern section, 3rd annual meeting, report of, 77

American Society of Plant Physiologists, midwest section, 4th annual meeting, 382

American Society of Plant Physiologists, southern section, meeting, 234

American Society of Plant Physiologists, western section, officers, 77

Amino acid (free) levels following gamma irradiation, 439

Anabaena sp., growth in crossed gradients of light intensity and temperature, 249

Anacystis nidulans, growth in crossed gradients of light intensity and temperature, 249

ANDERSON, LAURENS See FRITZ, G. J., 159

Anthemis cotula, MCPA adsorption by, 431

Anthocyanins in bracts of *Euphorbia pulcherrima* as revealed by paper chromatographic and spectrophotometric methods, 14

Anthocyanin production in apple skin, photocontrol of, 409

Anthocyanin synthesis in apple skin, photocontrol of, 185

Apple leaf, transport of foliar applied calcium and iron, 70

Apple skin, photocontrol of alcohol, aldehyde and anthocyanin production in, 409

Apple skin, photocontrol of anthocyanin synthesis in, 185

Arginine metabolism in watermelon seedlings, 350

ARONOFF, S. Review of "Chloroplast Pigments and Chromatographic Analysis," 305

Ascorbic acid-6-C^{14}, administered to excised grape leaf, labeling pattern of D-glucose from, 155

ASEN, SAM Anthocyanins in bracts of *Euphorbia pulcherrima* as revealed by paper chromatographic and spectrophotometric methods, 14

Ash, white, removal of sugars from sieve tubes of, 213

Aspergillus niger culture filtrate, a cause of curvatures and malformations in bean plants, 17

Aspergillus spp. culture filtrates, as a cause of curvatures and malformations in bean plants, 17

Assimilation of N^{15}-from labeled hyponitrite by soybean leaves, 105

AUDIA, W. V. See LIEBERMAN, MORRIS, 307

Authors, information and instructions for, 79

Auxin activity of some indole derivatives, 311

Avena phototropic tip-curvature, action spectrum of, 360

Avena sativa coleoptiles, chemical constitution of primary cell walls, 283

Avena sativa, MCPA adsorption by, 431

Avena sativa phototropic tip-curvature, action spectrum of, 360

Avocado particles, effect of bicarbonate on synthesis of fat by, 365

AVRON, MORDHAY See JAGENDORF, ANDRÉ T., 72

Azotobacter vinelandii, inhibition of the respiration of, 99

B

BACH, MICHAEL K. Translocation of photosynthetic products to soybean nodules and their role in nitrogen fixation, 118

BARBOUR, R. D. Identification and estimation of catabolic pathways of glucose in fruits, 396

Barley coleoptile, D-glucuronate utilization by, 146

Barley roots, non-metabolic uptake of ions by, 278

BAYLEY, S. T. See BISHOP, C. T., 283

Bean leaves, effect of ozone and ozonated 1-hexene on respiration and photosynthesis of, 416

Bean plant, circulation patterns for phosphorus, sulfur and calcium in, 293

Bean plant, curvatures and malformations caused by culture filtrate of *Aspergillus niger*, 17

BEEVERS, H. Review of "Introduction to Enzymology," 157

BEEVERS, HARRY See SLATER, W. G., 146

Beta-alanine protection of yeast growth against the inhibitory action of several chlorinated aliphatic acid herbicides, 43
Beta vulgaris, MCPA adsorption by, 431
Beta vulgaris, photochemical activity of isolated chloroplasts from, 367
Betula lutea, water content of stems, 173
BIALE, J. B. See SIEGELMAN, H. W., 403
Bicarbonate effect on the enzymic synthesis of long chain fatty acids, 365
BIDDULPH, O. Circulation patterns for phosphorus, sulfur and calcium in the bean plant, 293
BIDDULPH, SUSANN See BIDDULPH, O., 293
Bioassay method for a growth-substance, statistical evaluation of, 162
Biochemical studies of chilling injury in sweetpotatoes, 307
Biosynthesis of hordenine in tissue homogenates of *Panicum miliaceum* L., 334
Biosynthesis of pectinic acid methyl esters, 230
BIRD, HAROLD L., JR. A paper chromatographic separation of gibberellic acid and gibberellin A, 45
BISHOP, C. T. Chemical constitution of the primary cell walls of Avena coleoptiles, 283
Book review. Chloroplast Pigments and Chromatographic Analysis, Harold H. Strain, 305
Book review. Chromatographic Techniques, Ivor Smith, editor, 445
Book review. Die Biologie der Blute, F. Knoll, 158
Book review. Die Entstehung der Kulturpflanzen, F. Schwanitz, 158
Book review. Die Saftstrome der Pflanzen, B. Huber, 158
Book review. Environmental Control of Plant Growth, Frits W. Went, 382
Book review. Introduction to Enzymology, Alan H. Mehler, 157
Book review. The Physiology of Forest Trees, edited by K. V. Thimann with the assistance of W. B. Critchfield and M. H. Zimmerman, 446
Book review. Topics in Microbial Chemistry, F. M. Strong, 305
Book review. Traité de Chimie Biologique, Vol. I, Louis Genevois, 234
Boron distribution in cells in relation to growth, 428
BRADBEER, J. W. Malate synthesis in Crassulacean leaves. I. The distribution of C^{14} in malate of leaves exposed to $C^{14}O_2$ in the dark, 66
BRADY, LYNN R. Biosynthesis of hordenine in tissue homogenates of *Panicum miliaceum* L., 334
Brassica alba, MCPA adsorption by, 431
Brassica napus, MCPA adsorption by, 431
BRAY, J. R. Review of "The Physiology of Forest Trees," 446
BRIAN, P. W. Gibberellic acid, part VI. The biological activity of *allo*gibberic acid and its identity with gibberellin B, 329
BRIAN, R. C. On the action of plant growth regulators. II. Adsorption of MCPA to plant components, 431
BROWN, CLAUD L. The relation of the cotyledons to root development of pine embryos grown in vitro, 57
BROWN, J. C. Carbohydrate and organic acid metabolism with C^{14} distribution affected by copper in Thatcher wheat, 38
BROWN, THOMAS E. See EYSTER, CLYDE, 235
BROYER, T. C. See WOOLLEY, J. T., 1
Bryophyllum calycinum, dark fixation of CO_2 by leaves of, 400
Bryophyllum calycinum, malate synthesis in leaves of, 66
Bryophyllum leaf, D-glucuronate utilization by, 146
Bud formation by isolated Convolvulus roots grown in vitro, 258
BUHLER, D. R. See BARBOUR, R. D., 396
BURRELL, R. C. See FREAR, D. STUART, 105
BURRIS, R. H. See BACH, MICHAEL K., 118
BURRIS, R. H. See FRITZ, G. J., 159
BYERRUM, R. U. See WU, P.-H. L., 230

C

Calcium, circulation patterns for, 293
Calcium, effect of triiodobenzoic acid on transport of, 70
Carbohydrate and organic acid metabolism with C^{14} distribution affected by copper in Thatcher wheat, 38
Carbohydrate content of the root tip cells of *Allium cepa*, 64
C^{14}, incorporation into tartaric acid, 155
$C^{14}O_2$, fixation of, into tartaric and malic acids, 194
Carbon dioxide absorption and evolution by leaves, effect of light on, 289
Carbon dioxide, dark fixation of, 400
Castor bean, hypocotyl and endosperm, D-glucuronate utilization by, 146
Catabolic pathways of glucose in fruits, identification and estimation of, 396
Catechol, as substrate for polyphenol oxidase, 255
Cation uptake by roots, as affected by hydrogen ion, 139
Cell aggregations, propagation of turgor and other properties through, 271
Cell walls, primary, chemical constitution of, 283
Changes in oxidative enzyme activity during the curing of Connecticut shade tobacco, 151
Chemical constitution of the primary cell walls of Avena coleoptiles, 283
Chemical nature of silica in plants, 339
Chilling injury in sweetpotatoes, biochemical studies of, 307
Chlamydomonas reinhardti, effects of light intensity on growth rates of, 109
Chlorella pyrenoidosa and *C. vulgaris*, effects of light intensity on growth rates of, 109
Chlorella pyrenoidosa, growth in crossed gradients of light intensity and temperature, 249
Chlorella pyrenoidosa, manganese requirement, 235
Chloride ions, effects on tobacco, 133
Chlorine, movement within plants, 1
Chlorogenic acid, as substrate for polyphenol oxidase, 255
Chlorogenic acid, quantitative assay and pattern of distribution in tobacco leaves, 246
Chloroplasts, isolated, effect of petroleum ether extraction and readdition of various compounds on the photochemical activity of, 367

Chloroplast preparations, light-dependent oxygen metabolism of, 242
Chloroplasts, spinach, action spectrum for photosynthetic phosphorylation by, 72
Cholate extracts, properties of cytochrome oxidase in, 124
CHOW, C. T. See SIEGELMAN, H. W., 403
Chromatography, paper, identification of anthocyanins by, 14
Chromatography, paper, separation of gibberellic acid and gibberellin A by, 45
Circulation patterns for phosphorus, sulfur and calcium in the bean plant, 293
Citrulline metabolism in watermelon seedlings, 350
Clover seed, effect of 6-(substituted)purines and gibberellin on the rate of germination, 190
CLUM, HAROLD H. Triphosphopyridine nucleotide diaphorase from wheat germ, 354
Coleoptiles, Avena, chemical constitution of the primary cell walls, 283
Coleoptiles, corn, utilization of D-glucuronate by, 146
Coleus stem, D-glucuronate utilization by, 146
COLMER, ARTHUR R. See JOHNSON, EMMETT J., 99
Comparison of chlorogenic acid and catechol as substrates for the polyphenol oxidase from tobacco and mushroom, 255
Compositional factors associated with the growth responses of young cotton plants to gibberellic acid, 344
Conifers, measurement of sap flow in, by heat transport, 385
Convolvulus arvensis, formation of buds and roots by isolated roots of, 258
Copper, carbohydrate and organic acid metabolism with C^{14} distribution affected by, 38
Corn coleoptiles, utilization of D-glucuronate by, 146
Corn, effect of metal chelates on growth of, 166
Corn pollen, growth substances in, 144
Corn seedlings, respiring, direct incorporation of molecular oxygen into organic material by, 159
CORY, R. See BIDDULPH, O., 293
Cotton plants, growth responses to gibberellic acid, 344
Cotton seeds, germinating, fat utilization and composition in, 218
Cotyledons of pine embryos, relation to root development, 57
CRAFT, CHARLES S. See LIEBERMAN, MORRIS, 307
Crassulacean leaves, malate synthesis in, 66
Crossed gradients of light intensity and temperature, algal growth in, 249
CRUMPTON, C. F. See LANNING, F. C., 339
Cucumber fruits, catabolic pathways of glucose in, 396
CULLINAN, F. P. Obituary for Sam Farlow Trelease, 384
CURTIS, ROY W. Curvatures and malformations in bean plants caused by culture filtrate of *Aspergillus niger*, 17
Curvatures and malformations in bean plants caused by culture filtrate of *Aspergillus niger*, 17
Cyanidium caldarium, growth in crossed gradients of light intensity and temperature, 249
Cytochrome oxidase, properties of, in cholate extracts from soybean roots, 124
Cytochromes, in skunk cabbage mitochondria, 27

D

Dark fixation of CO_2 by succulent leaves: Conservation of the dark fixed CO_2 under diurnal conditions, 400
DAWSON, R. F. See SOLT, MARIE L., 375
DELWICHE, C. C. See KASTING, R., 350
Depth controlled deuteron irradiation of *Lactuca sativa* seeds. I. Effects on germination and growth, 321
Depth controlled deuteron irradiation of *Lactuca sativa* seeds. II. Energy loss in the outer seed layers, 326
Diaphorase, triphosphopyridine nucleotide, from wheat germ, 354
2,5-Dichlorobenzoic acid, growth of etiolated sections of pea internode following exposures to, 46
2,4-Dichlorophenoxyacetic acid, growth of etiolated sections of pea internode following exposures to, 46
2,4-Dichlorophenoxyacetic acid, molecular structure of, relationship to inhibition of *Azotobacter vinelandii* respiration, 99
2,4-Dichlorophenoxyacetic acid translocation, relation of potassium nutrition to, 300
Diffusibility, solute, 264
Diffusion in tissue, half-times and internal gradients, 275
Direct incorporation of molecular oxygen into organic material by respiring corn seedlings, 159
Distribution of boron in cells of dicotyledonous plants in relation to growth, 428
Dormancy, absence of, in mutant *Helianthus annuus*, 252
Drought resistance, method of determining, 232
DUNN, STUART See MAJUMDER, S. K., 166

E

Effect of bicarbonate on the enzymic synthesis of long chain fatty acids, 365
Effect of gibberellic acid on the flowering of Xanthium, a short day plant, 101
Effect of light on the CO_2 absorption and evolution by Kalanchoë, wheat and pea leaves, 289
Effect of metal chelates on growth of corn in solution cultures, 166
Effect of ozone and ozonated 1-hexene on respiration and photosynthesis of leaves, 416
Effect of petroleum ether extraction and readdition of various compounds on the photochemical activity of isolated chloroplasts, 367
Effect of 6-(substituted)purines and gibberellin on the rate of seed germination, 190
Effect of triiodobenzoic acid and maleic hydrazide upon the transport of foliar applied calcium and iron, 70
Effects of chloride and sulfate ions on the growth, leaf burn, composition and anatomical structure of tobacco (*Nicotiana tabacum* L.), 133
Effects of high temperature on yield of peas, 347
Effects of indoleacetic acid on the utilization of acetate-1-C^{14} by pea stem slices, 93
Effects of light intensity on the growth rates of green algae, 109

Effects of rosemary and thyme oil vapors on the stomata of cherry laurel, 181
Effects of some essential oil vapors on the stomata of Eupatorium and Mentha, 177
Effects of temperature on growth and dry matter accumulation of peas, 372
EL-SHISHINY, E. D. H. See SWANSON, C. A., 33
Embryos, pine, relation of cotyledons to root development, 57
Endogenous bud and root formation by isolated roots of Convolvulus grown in vitro, 258
Enolase, properties of, in extracts from pea seed, 199
Enzymatic formation of indole-3-carboxaldehyde from indole-3-acetic acid, 207
Enzyme, oxidative, changes in activity during curing of tobacco, 151
ERGLE, DAVID R. Compositional factors associated with the growth responses of young cotton plants to gibberellic acid, 344
Essential oil vapors, effects on stomata of Eupatorium and Mentha, 177
Eupatorium granulosum, effects of essential oil vapors on stomata of, 177
Euphorbia pulcherrima, anthocyanins in bracts of, 14
EVANS, HAROLD J. See MILLER, GENE W., 124
EVANS, H. J. See SISLER, E. C., 255
EVANS, MARJORIE B. See JAGENDORF, ANDRÉ T., 72
EYSTER, CLYDE Manganese requirement with respect to growth, Hill reaction and photosynthesis, 235

F

Fatty acids, effect of bicarbonate on the enzymic synthesis of, 365
Fat utilization and composition in germinating cotton seeds, 218
Fixation of $C^{14}O_2$ into tartaric and malic acids of excised grape leaves, 194
Flavin oxidase, oxygen affinity of, 113
Flowering, of Xanthium, effect of gibberellic acid on, 101
Fraxinus americana L., removal of sugars from sieve tubes of, 213
Fraxinus americana, water content of stems, 173
FREAR, D. STUART The assimilation of N^{15}-from labeled hyponitrite by soybean leaves, 105
Free amino acid levels in *Nicotiana glauca, N. langsdorffii* and their interspectific hybrid following gamma irradiation, 439
FRENCH, C. S. See HALLDAL, PER, 249
FRENCH, C. STACY See MILNER, MAX, 367
FRIED, MAURICE Multiple site uptake of individual cations by roots as affected by hydrogen ion, 139
FRITZ, G. J. Direct incorporation of molecular oxygen into organic material by respiring corn seedlings, 159
Fruits, identification and estimation of catabolic pathways of glucose in, 396
FUKUI, H. N. Growth substances in corn pollen, 144

G

Gamma irradiation, free amino acid levels in tobacco following, 439
GENTNER, W. A. See HILTON, J. L., 43
Germination and growth of *Lactuca sativa* seeds, effects of irradiation on, 321
Germination, lettuce seed, relationship of kinetin and red-light promotions of, 115
Gibberellic acid, effect on flowering of Xanthium, 101
Gibberellic acid, growth responses of cotton plants to, 344
Gibberellic acid, part VI. The biological activity of *allo*gibberic acid and its identity with gibberellin B, 329
Gibberellic acid, separation from gibberellin A by paper chromatography, 45
Gibberellin A, separation from gibberellic acid by paper chromatography, 45
Gibberellin B, identity with *allo*gibberic acid, 329
Gibberellin, effect of, on rate of seed germination, 190
Gibberellin, foliar applications, induction of sprouting in white potatoes, 132
GIFFORD, ERNEST M., JR. See BROWN, CLAUD L., 57
Glucose, catabolic pathways of, 396
Glucose, labeling pattern of, from an excised grape leaf administered L-ascorbic acid-6-C^{14}, 155
D-Glucuronate, utilization by corn coleoptiles, 146
Glycine max nodules, translocation of photosynthetic products to, 118
Glycine max, properties of cytochrome oxidase in cholate extracts from, 124
GOOD, NORMAN Review of "Topics in Microbial Chemistry," 305
GORDON, SOLON A. and HENDRICKS, STERLING B. Obituary for Robert Bruce Withrow, 447
GORDON, SOLON A. Intracellular localization of the tryptophan-indoleacetate enzyme system, 23
Gossypium hirsutum, fat utilization and composition in germinating seeds of, 218
Gradients, internal, and half-times, 275
Grape, labeling pattern of D-glucose from an excised leaf administered L-ascorbic acid-6-C^{14}, 155
Grape leaves, excised, fixation of $C^{14}O_2$ into tartaric and malic acids of, 194
Grape, translocation of sugars in, 33
Grass seed, effect of 6-(substituted)purines and gibberellin on the rate of germination, 190
Green algae, effects of light intensity on growth rates of, 109
GREENE, MARY T. The water content of maple stems. I. Application of the Karl Fischer method for the analyses of water in maple bark and wood, 169
GREENE, MARY T. The water content of maple stems. II. Apparent changes in the water content of maple stems and the physiology of maple sap flow, 173
GROVE, JOHN FREDERICK See BRIAN, P. W., 329
Growth, manganese requirement, 235
Growth of etiolated sections of pea internode following exposures to indole-3-acetic acid, 2,4-dichlorophenoxyacetic acid and 2,5-dichlorobenzoic acid, 46
Growth of peas, effects of temperature on, 372
Growth of tobacco, effects of chloride and sulfate ions on, 133
Growth rates of green algae, effects of light intensity on, 109

Growth-regulators, action of; adsorption of MCPA to plant components, 431
Growth, relation of boron distribution in cells to, 428
Growth substance bioassay method, statistical evaluation of, 162
Growth substances in corn pollen, 144
GUNCKEL, JAMES G. See HAGEN, G. L., 439

H

HABERMANN, HELEN M. Light-dependent oxygen metabolism of chloroplast preparations. I. Stimulation following quinone reduction, 242
HABERMANN, HELEN M. See WALLACE, RAYMOND H., 252
HACKETT, DAVID P. Oxidative phosphorylation and functional cytochromes in skunk cabbage mitochondria, 27
HACKETT, DAVID P. Pathways of oxidation in cell-free potato fractions. II. Properties of the soluble pyridine nucleotide oxidase system, 8
HACKETT, DAVID P. See NIEDERPRUEM, DONALD J., 113
Haematococcus lacustris, growth in crossed gradients of light intensity and temperature, 249
HAFEZ, M. G. A. Effects of rosemary and thyme oil vapors on the stomata of cherry laurel, 181
HAFEZ, M. G. A. Effects of some essential oil vapors on the stomata of Eupatorium and Mentha, 177
HAGEN, G. L. Free amino acid levels in *Nicotiana glauca, N. langsdorffii* and their interspecific hybrid following gamma irradiation, 439
HALLDAL, PER Algal growth in crossed gradients of light intensity and temperature, 249
HAMNER, K. C. See LINCOLN, R. G., 101
HANNAPEL, RAYMOND J. See JACOBSON, LOUIS, 278
HASS, DARRELL W. See HACKETT, DAVID P., 27
Heat transfer measurement of sap flow in conifers, 385
Helianthus annuus, absence of dormancy in white mutant, 252
Helianthus annuus, chemical nature of silica in, 339
Helianthus annuus, distribution of boron in cells of, relation to growth, 428
HEMMING, H. G. See BRIAN, P. W., 329
HENDERSHOTT, C. H. See WALKER, DAVID R., 162
HENDRICKS, STERLING B. and GORDON, SOLON A. Obituary for Robert Bruce Withrow, 447
HENDRICKS, STERLING B. See JAGENDORF, ANDRÉ T., 72
HENDRICKS, S. B. See SIEGELMAN, H. W., 185
HENDRICKS, S. B. See SIEGELMAN, H. W., 409
Herbicides, protection of yeast growth by beta-alanine against inhibitory action of, 43
Hessian fly infestation of wheat plants as related to lipid soluble pigments, 413
Hordenine biosynthesis in tissue homogenates of *Panicum miliaceum* L., 334
Hordeum sativum, MCPA adsorption by, 431
HORWITZ, LEONARD Some simplified mathematical treatments of translocation in plants, 81
Hill reaction, manganese requirement, 235
HILTON, J. L. Beta-alanine protection of yeast growth against the inhibitory action of several chlorinated aliphatic herbicides, 43
HOLMES, R. S. See BROWN, J. C., 38
HOOD, S. L. See EYSTER, CLYDE, 235
Hydrogen ion, cation uptake by roots affected by, 139
Hyponitrite, labeled, assimilation of N^{15} from, 105

I

Identification and estimation of catabolic pathways of glucose in fruits, 396
Indole derivatives, auxin activity of, 311
Iodine as a micronutrient for tomatoes, 421
Ions, non-metabolic uptake of, 278
Indoleacetic acid, effects on the utilization of acetate-1-C^{14} by pea stem slices, 93
Indole-3-acetic acid, formation of indole-3-carboxaldehyde from, 207
Indole-3-acetic acid, growth of etiolated sections of pea internode following exposure to, 46
Indole-3-carboxaldehyde, formation from indole-3-acetic acid, 207
Information and instructions for contributors to PLANT PHYSIOLOGY, 79
Intracellular localization of the tryptophan-indoleacetate enzyme system, 23
Ipomoea batatas, biochemical studies of chilling injury in, 307
Iron, effect of triiodobenzoic acid on the transport of, 70
Irradiation, depth controlled, effects on germination and growth of *Lactuca sativa* seeds, 321
Irradiation, depth controlled, of *Lactuca sativa* seeds; energy loss in the outer seed layers, 326
Irradiation, gamma, free amino acid levels in tobacco following, 439

JK

JACOBSON, LOUIS Non-metabolic uptake of ions by barley roots, 278
JAGENDORF, ANDRÉ T. The action spectrum for photosynthetic phosphorylation by spinach chloroplasts, 72
JANSEN, L. L. See HILTON, J. L., 43
JENSEN, W. A. Carbohydrate content of the root tip cells of *Allium cepa*, 64
JOHNSON, EMMETT J. The relationship of magnesium ion and molecular structure of 2,4-dichlorophenoxyacetic acid and some related compounds to the inhibition of respiration of *Azotobacter vinelandii*, 99
JOHNSON, G. V. See WOOLLEY, J. T., 1
JOHNSON, J. A. See MILLER, BYRON S., 413
JONES, E. T. See MILLER, BYRON S., 413
Juglans cinerea, water content of stems, 173
Kalanchoë blossfeldiana leaves, light effects on CO_2 metabolism by, 289
Kalanchoë crenata, malate synthesis in leaves of, 66
Kalanchoë crenata leaves, transaminases in cell-free extracts of, 226
Kalanchoë, peduncle, D-glucuronate utilization by, 146
KALOYEREAS, SOCRATES A. A new method of determining drought resistance, 232

KASTING, R. Ornithine, citrulline, and arginine metabolism in watermelon seedlings, 350
KESSLER, B. Effect of triiodobenzoic acid and maleic hydrazide upon the transport of foliar applied calcium and iron, 70
Kidney bean, immature seed and pericarp, D-glucuronate utilization by, 146
Kinetin and red-light promotions of lettuce seed germination, relationship of, 115
KLEIN, S. Depth controlled deuteron irradiation of *Lactuca sativa* seeds. I. Effects on germination and and growth, 321
KLEIN, S. See PREISS, JOHN W., 326
KOONTZ, H. See BIDDULPH, O., 293
KRAUSS, ROBERT W. See SOROKIN, CONSTANTINE, 109
KROTKOV, G. Effect of light on the CO_2 absorption and evolution by Kalanchoë, wheat and pea leaves, 289
KUNITAKE, G. Dark fixation of CO_2 by succulent leaves: Conservation of the dark fixed CO_2 under diurnal conditions, 400

L

Lactuca sativa seeds, effects of irradiation on germination and growth, 321
Lactuca sativa seeds, irradiation of; energy loss in the outer seed layers, 326
LAMBERT, R. G. Effects of high temperature on yield of peas, 347
LANNING, F. C. The chemical nature of silica in plants, 339
Lantana camara, chemical nature of silica in, 339
LEHR, J. J. Iodine as a micronutrient for tomatoes, 421
Lemna minor, manganese requirement, 235
LEOPOLD, A. CARL Review of "Environmental Control of Plant Growth," 382
Lepidium sativum, MCPA adsorption by, 431
Lettuce seed, effect of 6-(substituted)purines and gibberellin on the rate of germination, 190
Lettuce seed germination, relationship of kinetin and red-light promotions of, 115
Lettuce seeds, effects of irradiation on germination and growth of, 321
Lettuce seeds, irradiation of; energy loss in the outer seed layers, 326
LIEBERMAN, MORRIS Biochemical studies of chilling injury in sweetpotatoes, 307
Light-dependent oxygen metabolism of chloroplast preparations. I. Stimulation following quinone reduction, 242
Light effect on CO_2 absorption and evolution by leaves, 289
Light intensity and temperature, algal growth in crossed gradients of, 249
Light intensity, effect on growth rates of green algae, 109
Lima bean epicotyl, D-glucuronate utilization by, 146
Lime fruits, catabolic pathways of glucose in, 396
LINCK, A. J. See LAMBERT, R. G., 347
LINCOLN, R. G. An effect of gibberellic acid on the flowering of Xanthium, a short day plant, 101
Lipid soluble pigments of wheat plants as related to Hessian fly infestation, 413
LIPPERT, L. F. Systemic induction of sprouting in white potatoes by foliar applications of gibberellin, 132
LOEHWING, W. F. Obituary for Joseph Fisher Stanfield, 448
LOEWUS, FRANK A. Observations on the incorporation of C^{14} into tartaric acid and the labelling pattern of D-glucose from an excised grape leaf administered L-ascorbic acid-6-C^{14}, 155
LOEWUS, FRANK A. See STAFFORD, HELEN A., 194
Lolium italicum, MCPA adsorption by, 431
Lupinus albus, enzymatic formation of indole-3-carboxaldehyde from IAA oxidase from, 207
Lycopersicum esculentum, MCPA adsorption by, 431
Lycopersicum esculentum rootstocks grafted to *Nicotiana tabacum* scions, production, translocation and accumulation of alkaloids in, 375

M

MACDOUGAL, DANIEL TREMBLY Obituary, 383
MAGEE, W. E. See BACH, MICHAEL K., 118
Magnesium ion, relationship to inhibition of *Azotobacter vinelandii* respiration, 99
MAJUMDER, S. K. Effect of metal chelates on growth of corn in solution cultures, 166
Malate synthesis in Crassulacean leaves. I. The distribution of C^{14} in malate of leaves exposed to $C^{14}O_2$ in the dark, 66
Maleic hydrazide, effect upon transport of foliar applied calcium and iron, 70
Malic acid, fixation of $C^{14}O_2$ into, 194
Maganese requirement with respect to growth, Hill reaction and photosynthesis, 235
Manuscripts, preparation of, 79
Maple stems, apparent changes in water content of, 173
Maple stems, water content of, application of Karl Fischer method for analyses of, 169
MARSHALL, D. C. Measurement of sap flow in conifers by heat transport, 385
MARVIN, JAMES W. See GREENE, MARY T., 169
MARVIN, JAMES W. See GREENE, MARY T., 173
Mathematical treatments of translocation in plants, 81
MCILRATH, WAYNE J. See SKOK, JOHN, 428
MCPA, adsorption to plant components, 431
Measurement of sap flow in conifers by heat transport, 385
Mentha spicata, effects of essential oil vapors on stomata of, 177
Metabolism, acid, in green plants, 226
Metabolism, ornithine, citrulline and arginine, in watermelon seedlings, 350
Metal chelates effect on growth of corn in solution cultures, 166
Micronutrient, iodine as a, 421
MILLER, BYRON S. Lipid soluble pigments of wheat plants as related to Hessian fly infestation, 413
MILLER, CARLOS, O. The relationship of the kinetin and red-light promotions of lettuce seed germination, 115

MILLER, GENE W. Properties of enolase in extracts from pea seed, 199
MILLER, GENE W. The properties of cytochrome oxidase in cholate extracts from soybean roots, 124
MILLER, WILMER G. See FRITZ, G. J., 159
MILNER, H. W. See MILNER, MAX, 367
MILNER, MAX Effect of petroleum ether extraction and readdition of various compounds on the photochemical activity of isolated chloroplasts, 367
MITCHELL, H. L. See MILLER, BYRON S., 413
Mitochondria, skunk cabbage, oxidative phosphorylation and functional cytochromes in, 27
MONSELISE, SHAUL P. Effects of temperature on growth and dry matter accumulation of peas, 372
MOORE, DAVID P. See JACOBSON, LOUIS, 278
MOSCICKI, ZEV W. See KESSLER, B., 70
Movement of chlorine within plants, 1
MULHOLLAND, T. P. C. See BRIAN, P. W., 329
Multiple site uptake of individual cations by roots as affected by hydrogen ion, 139
MURNEEK, A. E. Obituary for Daniel Trembly MacDougal, 383
Mushroom, substrates for the polyphenol oxidase from, 255
Mutant *Helianthus annuus*, lack of seed dormancy in, 252

N

NANCE, JAMES F. Effects of indoleacetic acid on the utilization of acetate-1-C^{14} by pea stem slices, 93
NASON, ALVIN See CLUM, HAROLD H., 354
New method of determining drought resistance, 232
Nicotiana glauca, free amino acid levels in, following gamma irradiation, 439
Nicotiana hybrid, free amino acid levels in, following gamma irradiation, 439
Nicotiana langsdorffii, free amino acid leve's in, following gamma irradiation, 439
Nicotiana tabacum leaves, chlorogenic acid in, 246
Nicotiana tabacum L., effects of chloride and sulfate ions on, 133
Nicotiana tabacum scions grafted to *Lycopersicum esculentum* rootstocks, production, translocation and accumulation of alkaloids in, 375
Nicotiana tabacum, substrates for the polyphenol oxidase from, 255
NIEDERPRUEM, DONALD J. The oxygen affinity of a flavin oxidase involved in the respiration of *Streptococcus faecalis*, 113
Ninth International Botanical Congress, information on, 78
N^{15}, assimilation by soybean leaves from labeled hyponitrite, 105
Nitrogen fixation in soybean nodules, role of translocated photosynthetic products in, 118
NOGGLE, G. R. Reviews of "Die Biologie der Blute," "Die Saftstrome der Pflanzen," and "Die Entstehung der Kulturpflanzen," 158
NOGGLE, J. C. See FRIED, MAURICE, 139
Non-metabolic uptake of ions by barley roots, 278
Nostoc muscorum, manganese requirement, 235

O

Obituary. DANIEL TREMBLY MACDOUGAL, 383
Obituary. JOSEPH FISHER STANFIELD, 448
Obituary. ROBERT BRUCE WITHROW, 447
Obituary. SAM FARLOW TRELEASE, 384
Observations on the incorporation of C^{14} into tartaric acid and the labelling pattern of D-glucose from an excised grape leaf administered L-ascorbic acid-6-C^{14}, 155
Oil vapors, effects on stomata, 177
Oil vapors, rosemary and thyme, effects on stomata of the cherry laurel, 181
On the action of plant growth regulators. II. Adsorption of MCPA to plant components, 431
Orange leaves, effect of ozone and ozonated 1-hexene on respiration and photosynthesis of, 416
Organic acid metabolism, C^{14} distribution affected by copper, 38
Organic substances, translocation in trees, 213
Ornithine, citrulline, and arginine metabolism in watermelon seedlings, 350
Orange fruits, catabolic pathways of glucose in, 396
OSBORNE, DAPHNE J. Growth of etiolated sections of pea internode following exposures to indole-3-acetic acid, 2,4-dichlorophenoxyacetic acid and 2,5-dichlorobenzoic acid, 46
Osmosis and diffusion in tissue: half-times and internal gradients, 275
Osmosis and diffusion in tissue: half-times and internal gradients, correction to, 443
Osmotic cell, solute diffusibility, and the plant water economy, 264
Oxidase, flavin, oxygen affinity of, 113
Oxidation pathways in cell-free potato fractions, 8
Oxidative enzyme activity, changes during curing of tobacco, 151
Oxidative phosphorylation and functional cytochromes in skunk cabbage mitochondria, 27
Oxygen affinity of a flavin oxidase involved in the respiration of *Streptococcus faecalis*, 113
Oxygen metabolism of chloroplast preparations, 242
Oxygen, molecular, direct incorporation into organic material by respiring corn seedlings, 159
Ozonated 1-hexene, effect on respiration and photosynthesis, 416
Ozone, effect on respiration and photosynthesis, 416

PQ

Panicum miliaceum tissue homogenates, hordenine biosynthesis in, 334
Paper chromatographic method, identification of anthocyanins by, 14
Paper chromatographic separation of gibberellic acid and gibberellin A, 45
Paper chromatography, separation of gibberellic acid and gibberellin A by, 45
Pathways of oxidation in cell-free potato fractions. II. Properties of the soluble pyridine nucleotide oxidase system, 8
Peach leaves, transport of foliar applied calcium and iron, 70

Pea epicotyl, D-glucuronate utilization by. 146
Pea leaves, light effects on CO_2 metabolism by, 289
Pea internode, growth of etiolated sections of, 46
Pea seed extracts, properties of enolase in, 199
Peas, effect of high temperature on yield, 347
Peas, effects of temperature on growth and dry matter accumulation of, 372
Pea stem slices, effects of IAA on the utilization of acetate-1-C^{14} by, 93
Pectinic acid methyl esters, biosynthesis of, 230
Phaseolus aureus, distribution of boron in cells of, relation to growth, 428
Phaseolus aureus, intracellular distribution of the tryptophan-indoleacetate enzyme system in, 23
PHILIP, J. R. Correction to "Osmosis and diffusion in tissue: half-times and internal gradients," 443
PHILIP, J. R. Osmosis and diffusion in tissue: half-times and internal gradients, 275
PHILIP, J. R. Propagation of turgor and other properties through cell aggregations, 271
PHILIP, J. R. The osmotic cell, solute diffusibility, and the plant water economy, 264
Phosphorus, circulation patterns for, 293
Phosphorylation, oxidative, in skunk cabbage mitochondria, 27
Phosphorylation, photosynthetic, by spinach chloroplasts, action spectrum for, 72
Photochemical activity of isolated chloroplasts, 367
Photocontrol of alcohol, aldehyde and anthocyanin production in apple skin, 409
Photocontrol of anthocyanin synthesis in apple skin, 185
Photosynthesis, effect of ozone and ozonated 1-hexene on, 416
Photosynthesis, manganese requirement, 235
Photosynthetic phosphorylation by spinach chloroplasts, action spectrum for, 72
Photosynthetic products, translocation to soybean nodules, role in nitrogen fixation, 118
Phototropic tip-curvature of Avena, action spectrum of, 360
Physiological studies on acid metabolism in green plants. VI. Transaminases in cell-free extracts from Kalanchoë leaves, 226
Phytolacca americana, oxygen metabolism of chloroplasts from, 242
Phytolacca americana, photochemical activity of isolated chloroplasts from, 367
Pigments, lipid soluble, as related to Hessian fly infestation, 413
Pine embryos, relation of cotyledons to root development, 57
Pinus lambertiana embryos, relation of cotyledons to root development, 57
Pinus taeda, method of determining drought resistance of, 232
Pisum sativum, effects of high temperature on yield, 347
Pisum sativum, effects of temperature on growth and dry matter accumulation of, 372
Pisum sativum internode, growth of etiolated sections of, 46
Pisum sativum leaves, effects of light on CO_2 metabolism by, 289
Pisum sativum, MCPA adsorption by, 431
Pisum sativum, properties of enolase in extracts from, 199
Plum leaves, transport of foliar applied calcium and iron, 70
Poinsettia, anthocyanins in bracts of, 14
Pollen, corn, growth substances in, 144
PONNAIYA, B. W. X. See LANNING, F. C., 339
Porphyridium cruentum, manganese requirement, 235
Potassium nutrition, relation to translocation of 2,4-D, 300
Potatoes, white, induction of sprouting by gibberellin, 132
Potato fractions, cell-free, oxidation pathways in, 8
PREISS, JOHN W. Depth controlled deuteron irradiation of *Lactuca sativa* seeds. II. Energy loss in the outer seed layers, 326
PREISS, JOHN W. See KLEIN, S., 321
Primary cell walls, chemical constitution of, 283
Proceedings of the meetings sponsored jointly by the American Society of Plant Physiologists and the physiological section of the Botanical Society of America held at Indiana University, Bloomington, August 24–28, 1958. i–li.
Production, translocation and accumulation of alkaloids in tobacco scions grafted to tomato rootstocks, 375
Propagation of turgor and other properties through cell aggregations, 271
Properties of cytochrome oxidase in cholate extracts from soybean roots, 124
Properties of enolase in extracts from pea seed, 199
Proso tissue homogenates, hordenine biosynthesis in, 334
Prunus laurocerasus stomata, effects of rosemary and thyme oil vapors on, 181
PUGH, CHARLES T. See BIRD, HAROLD L., JR., 45
Purines, 6-(substituted), effect on the rate of seed germination, 190
Pyridine nucleotide oxidase system in cell-free potato fractions, properties of, 8
Quantitative assay of chlorogenic acid and its pattern of distribution within tobacco leaves, 246
Quercus rubra, water content of stems, 173
Quinone reduction, stimulation of oxygen metabolism following, 242

R

RADLEY, MARGARET See BRIAN, P. W., 329
RANSON, S. L. See BRADBEER, J. W., 66
RANSON, S. L. See WALKER, D. A., 226
Raphanus sativus, biosynthesis of pectinic acid methyl esters in 230
RAPPAPORT, LAWRENCE See LIPPERT, L. F., 132
Red-light promotions of seed germination, relationship to kinetin promotions of seed germination, 115
Relation of cotyledons to root development of pine embryos grown in vitro, 57

Relation of potassium nutrition to the translocation of 2,4-dichlorophenoxyacetic acid in tomato plants, 300
Relationship of magnesium ion and molecular structure of 2,4-dichlorophenoxyacetic acid and some related compounds to the inhibition of the respiration of *Azotobacter vinelandii*, 99
Relationship of the kinetin and red-light promotions of lettuce seed germination, 115
Respiration, effect of ozone and ozonated 1-hexene on, 416
Respiration of *Azotobacter vinelandii*, relationship of magnesium ion and molecular structure of 2,4-D to the inhibition of, 99
Respiration of developing rose petals, 403
Retranslocation of chlorine within plants, 1
RICE, ELROY L. Relation of potassium nutrition to the translocation of 2,4-dichlorophenoxyacetic acid in tomato plants, 300
Root development of pine embryos, relation to the cotyledons, 57
Root formation by isolated Convolvulus roots grown in vitro, 258
Roots, barley, non-metabolic uptake of ions by, 278
Roots, cation uptake by, as affected by hydrogen ion, 139
Root tip cells of *Allium cepa*, carbohydrate content of, 64
RORHBAUGH, LAWRENCE M. See RICE, ELROY L., 300
Rosa hybrida, respiration of developing petals of, 403
ROSANOW, M. See LEHR, J. J., 421
Rose petals, developing, respiration of, 403
RUNECKLES, V. C. See KROTKOV, G., 289

S

Saccharomyces cerevisiae growth, protection by beta-alanine against inhibitory action of herbicides, 43
SALTMAN, PAUL See KUNITAKE, G., 400
Sap flow, maple, physiology of, 173
Sap flow, measurement by heat transport, 385
Scenedesmus obliquus, effects of light intensity on growth rates of, 109
Scenedesmus quadricauda, manganese requirement, 235
SCHMID, CHARLOTTE See SQUIRES, CRAIG L., 365
Seed germination, effect of 6-(substituted)purines on rate of, 190
SELL, H. M. See FUKUI, H. N., 144
Senecio vulgaris, MCPA adsorption by, 431
SETTERFIELD, G. See BISHOP, C. T., 283
SHIVE, WILLIAM. See SKINNER, CHARLES G., 190
Short day plant, Xanthium, effect of gibberellic acid on the flowering of, 101
SHROPSHIRE, WALTER, JR. Action spectrum of phototropic tip-curvature of Avena, 360
SIEGELMAN, H. W. Photocontrol of alcohol, aldehyde and anthocyanin production in apple skin, 409
SIEGELMAN, H. W. Photocontrol of anthocyanin synthesis in apple skin, 185
SIEGELMAN, H. W. Respiration of developing rose petals, 403
Sieve tubes of white ash, removal of sugars from, 213
Silica in plants, chemical nature of, 339
SISLER, E. C. A comparison of chlorogenic acid and catechol as substrates for the polyphenol oxidase from tobacco and mushroom, 255
SISLER, EDWARD See MILLER, GENE W., 124
SKINNER, CHARLES G. Effect of 6-(substituted)purines and gibberellin on the rate of seed germination, 190
SKOK, JOHN Distribution of boron in cells of dicotyledonous plants in relation to growth, 428
Skunk cabbage mitochondria, oxidative phosphorylation and functional cytochromes in, 27
SLATER, W. G. Utilization of D-glucuronate by corn coleoptiles, 146
SNEDECOR, GEORGE W. See WALKER, DAVID R., 162
Solanum tuberosum, oxidation pathways in cell-free fractions, 8
Solanum tuberosum, systemic induction of sprouting by foliar applications of gibberellin, 132
SOLT, MARIE L. Production, translocation and accumulation of alkaloids in tobacco scions grafted to tomato rootstocks, 375
Solute diffusibility, 264
Some simplified mathematical treatments of translocation in plants, 81
Sorghum subglabrascens, chemical nature of silica in, 339
SOROKIN, CONSTANTINE The effects of light intensity on the growth rates of green algae, 109
Soybean epicotyl, D-glucuronate utilization by, 146
Soybean leaves, assimilation of N^{15}-from labeled hyponitrite by, 105
Soybean nodules, translocation of photosynthetic products to, 118
Soybean roots, cytochrome oxidase in cholate extracts from, 124
Spinach chloroplasts, action spectrum for photosynthetic phosphorylation by, 72
Sprouting in white potatoes, induced by foliar applications of gibberellin, 132
SQUIRES, CRAIG L. Effect of bicarbonate on the enzymic synthesis of long chain fatty acids, 365
STAFFORD, HELEN A. The fixation of $C^{14}O_2$ into tartaric and malic acids of excised grape leaves, 194
STANFIELD, JOSEPH FISHER Obituary, 448
Statistical evaluation of a growth substance bioassay method using extracts of dormant peach buds, 162
Stellaria media, MCPA adsorption by, 431
STEPKA, WILLIAM Review of "Chromatographic Techniques," 445
STILLER, MARY See BRADBEER, J. W., 66
Stomata, effects of essential oil vapors on, 177
Stomata of cherry laurel, effects of rosemary and thyme oil vapors on, 181
Streptococcus faecalis respiration, oxygen affinity of a flavin oxidase involved in, 113
STRUCKMEYER, B. ESTHER See WEDIN, WALTER F., 133
Studies on the biosynthesis of pectinic acid methyl esters, 230
STUMPF, P. K. See SQUIRES, CRAIG L., 365
STUTZ, ROBERT E. Enzymatic formation of indole-3-carboxaldehyde from indole-3-acetic acid, 207

Sugar beet plants, movement of chlorine within, 1
Sugars, removal from sieve tubes in white ash, 213
Sugars, translocation in the Concord grape, 33
Sulfate ions, effects on tobacco, 133
Sulfur, circulation patterns for, 293
Supplement to volume 33. Proceedings of the meetings sponsored jointly by the American Society of Plant Physiologists and the physiological section of the Botanical Society of America held at Indiana University, Bloomington, August 24–28, 1958. i–li.
SWANSON, C. A. Translocation of sugars in the Concord grape, 33
Sweetpotatoes, biochemical studies of chilling injury in, 307
Symplocarpus foetidus, oxidative phosphorylation in mitochondria of, 27
Systemic induction of sprouting in white potatoes by foliar applications of gibberellin, 132

T

TALBERT, FREDDIE D. See SKINNER, CHARLES G., 190
TANNER, HOWARD A. See EYSTER, CLYDE, 235
Tartaric acid, fixation of $C^{14}O_2$ into, 194
Tartaric acid, incorporation of C^{14} into, 155
Temperature and light intensity, algal growth in crossed gradients of, 249
Temperature effects on growth and dry matter accumulation of peas, 372
Temperature effects on yield of peas, 347
TEUBNER, F. G. See FUKUI, H. N., 144
THIMANN, KENNETH V. Auxin activity of some indole derivatives, 311
THIMANN, K. V. See KROTKOV, G., 289
TIFFIN, L. O. See BROWN, J. C., 38
TIMM, HERMAN See LIPPERT, L. F., 132
Tip-curvature of Avena, phototropic, action spectrum of, 360
Tissue culture, formation of buds and roots by isolated Convolvulus roots, 258
Tobacco, changes in oxidative enzyme activity during curing of, 151
Tobacco, effects of chloride and sulfate ions on, 133
Tobacco, free amino acid levels in, following gamma irradiation, 439
Tobacco leaves, chlorogenic acid in, 246
Tobacco scions grafted to tomato rootstocks, production, translocation and accumulation of alkaloids in, 375
Tobacco, substrates for the polyphenol oxidase from, 255
TODD, GLENN W. Effect of ozone and ozonated 1-hexene on respiration and photosynthesis of leaves, 416
Tomatoes, iodine as a micronutrient for, 421
Tomato fruits, catabolic pathways of glucose in, 396
Tomato petiole, D-glucuronate utilization by, 146
Tomato plants, movement of chlorine within, 1
Tomato plants, relation of potassium nutrition to translocation of 2,4-D in, 300
Tomato stem, transport of foliar applied calcium and iron, 70
Tomato rootstocks grafted to tobacco scions, production, translocation and accumulation of alkaloids in, 375
TORREY, JOHN G. Endogenous bud and root formation by isolated roots of Convolvulus grown in vitro, 258
Transaminases in cell-free extracts from Kalanchoë leaves, 226
Translocation in plants, mathematical treatments of, 81
Translocation of 2,4-D, relation to potassium nutrition, 300
Translocation of organic substances in trees. III. The removal of sugars from the sieve tubes in the white ash (*Fraxinus americana* L.), 213
Translocation of photosynthetic products to soybean nodules and their role in nitrogen fixation, 118
Translocation of sugars in the Concord grape, 33
Transport of foliar applied calcium and iron, effect of triiodobenzoic acid on, 70
TRELEASE, SAM FARLOW Obituary, 384
Triphosphopyridine nucleotide diaphorase from wheat germ, 354
Triticum vulgare, chemical nature of silica in, 339
Triticum vulgare leaves, effects of light on CO_2 metabolism by, 289
Triticum vulgare, MCPA adsorption by, 431
Tryptophan-indoleacetate enzyme system, intracellular localization of, 23
Turgor, propagation of, through cell aggregations, 271
TYLER, VARRO E., JR. See BRADY, LYNN R., 334

UV

Utilization of D-glucuronate by corn coleoptiles, 146
Vicia faba, MCPA adsorption by, 431
Vitis labruscana, translocation of sugars in, 33
Vitis vinifera, fixation of $C^{14}O_2$ into tartaric and malic acids of excised leaves, 194

W

WALKER, DAVID R. A statistical evaluation of a growth substance bioassay method using extracts of dormant peach buds, 162
WALKER, D. A. Physiological studies on acid metabolism in green plants. VI. Transaminases in cell-free extracts from Kalanchoë leaves, 226
WALLACE, RAYMOND H. Absence of seed dormancy in a white mutant strain of *Helianthus annuus* L., 252
WANG, C. H. See BARBOUR, R. D., 396
Water content of maple stems. I. Application of the Karl Fischer method for the analyses of water in maple bark and wood, 169
Water content of maple stems. II. Apparent changes in the water content of maple stems and the physiology of maple sap flow, 173
Water economy, plant, 264
Watermelon seedlings, ornithine, citrulline, and arginine metabolism in, 350
WEBSTER, GEORGE C. Review of "Traité de Chimie Biologique, Vol. I," 234

WEDIN, WALTER F. Effects of chloride and sulfate ions on the growth, leaf burn, composition and anatomical structure of tobacco (*Nicotiana tabacum* L.), 133
WENT, FRITS W. See MONSELISE, SHAUL P., 372
Wheat coleoptile, D-glucuronate utilization by, 146
Wheat germ, triphosphopyridine nucleotide diaphorase from, 354
Wheat leaves, light effects on CO_2 metabolism by, 289
Wheat, metabolism affected by copper, 38
Wheat plants, lipid soluble pigments of, as related to Hessian fly infestation, 413
WHITE, HAROLD B., JR. Fat utilization and composition in germinating cotton seeds, 218
WILCOX, M. S. See LIEBERMAN, MORRIS, 307
WITHROW, ROBERT BRUCE Obituary, 447
WITHROW, ROBERT B. See SHROPSHIRE, WALTER, JR., 360
WITTWER, S. H. See FUKUI, H. N., 144
WOOLLEY, J. T. Movement of chlorine within plants, 1
WU, P.-H. L. Studies on the biosynthesis of pectinic acid methyl esters, 230
WYBENGA, J. M. See LEHR, J. J., 421

XYZ

Xanthium pennsylvanicum, effect of gibberellic acid on the flowering of, 101
Yeast growth, protection of, against inhibitory action of herbicides by beta-alanine, 43
Zea mays, chemical nature of silica in, 339
Zea mays, MCPA adsorption by, 431
Zea mays pollen, growth substances in, 144
Zea mays, respiring, direct incorporation of molecular oxygen into organic material by, 159
ZELITCH, ISRAEL Changes in oxidative enzyme activity during the curing of Connecticut shade tobacco, 151
ZIMMERMANN, MARTIN H. Translocation of organic substances in trees. III. The removal of sugars from the sieve tubes in the white ash (*Fraxinus americana* L.), 213
ZUCKER, MILTON Quantitative assay of chlorogenic acid and its pattern of distribution within tobacco leaves, 246
ZUCKER, MILTON See ZELITCH, ISRAEL, 151